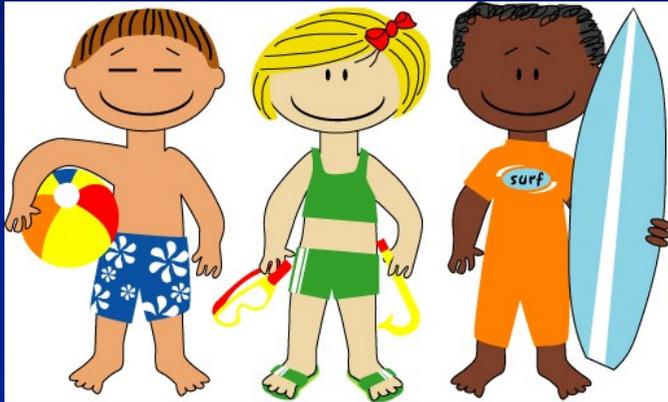


# New ACIP Recommendations for HPV Vaccination



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Medical Director

# Disclosures

- I have no financial disclosures.
- I do not plan to discuss off label uses of vaccines.
- I have borrowed/stolen extensively from a talk by Dr. Sharon Humiston who used CDC's HPV Speaker's Bureau slides

# Objectives

- Discuss the epidemiology of human papillomaviruses (HPV)
- Explain how HPV vaccines are produced
- Explain the new ACIP recommendations
- Discuss the barriers to use of HPV vaccines

# Human Papillomaviruses

- DNA viruses, family Papovaviridae
- Over 100 types
- Specialized for epithelia
- Not cytotoxic, viral genes promote replication and delay differentiation, leads to proliferative lesions (warts)

# Benign skin

- Keratinized epithelium
- Palmar and plantar warts
- HPV 1 and 2
- No cancers recognized

# Epidermodysplasia verruciformis

- Keratinized epithelium
- Flat warts and subclinical
- HPV 5 and 8
- Inherited disorder of cell mediated immunity
- Skin cancers common, squamous cell

# Genital warts

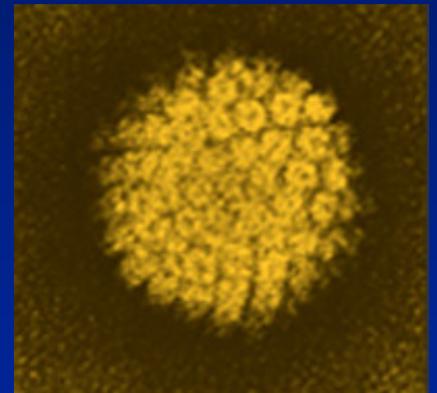
- Genital epithelium and mucosa warts
- 90% due to HPV 6 and 11
- 360,000 new cases/year
- No cancers recognized
- Respiratory papillomatosis in children

# High-risk genital

- Genital epithelium and mucosa
- Flat warts or subclinical
- HPV 16, 18, 31, 45
- Cervical dysplasia and cancer
- Anal intraepithelial neoplasms
- Oropharyngeal cancers

# HPV and cancers

- 91% of cervical cancer - >4000 deaths/yr
- 91% of anal cancers
- 75% of vaginal cancers
- 70% of oropharyngeal cancers
- 69% of vulvar cancers
- 63% of penile cancers



# HPV Epidemiology

- Spread person to person by close contact
- Asymptomatic people can transmit
- Anogenital – over 40 types, sexual spread
- Over 40% of adolescents infected
- Regular condom use does decrease risk
- Incubation unknown, probably mos to yrs

# Clinical illnesses

- Warts: skin, flat
- Condylomata acuminata: anogenital warts
- Respiratory papillomatosis
- Epidermodysplasia verruciformis
- Oncogenic potential on mucous membranes

# HPV Vaccines

- Virus-like particles genetically engineered
- Capsid proteins produced; form shells
- Gardasil: recombinant *Saccharomyces*
- Cervarix: recombinant baculovirus in *Trichoplusia ni* insect cells

# HPV Vaccines

- Originally three dose series, now 2 or 3
- 0, 1 mo, 6 mo. vs. 0, 6-12 months
- 3 doses if >15 yr.; 2 doses if younger
- Well tolerated
- Pain at injection site, fainting
- Highly immunogenic and protective

# Latest ACIP Recommendation

- Universal starting at age 11-12 years
- Can start earlier, as young as 9 years
- Two doses if start < 15 years
- Time 0 and 6-12 mo
- Three doses if 15 and older
- Time 0, 1-2 mo and 6 months

# Special Populations

- Child sexually abused: start at age 9
- Men having sex with men: universal through age 26 years
- Immunocompromised: 3 dose series

# Gardasil (Merck)

- Quadrivalent types 6, 11, 16, 18
- 9 valent: 6, 11, 16, 18, 31, 33, 45, 52, and 58
- Immunogenic and effective in girls and boys
- 100% effective against persisting infection
- Licensed for girls and boys, start age 11-12
- 9 valent replaces quadrivalent

# Cervarix (GSK)

- Types 16 and 18
- Immunogenic and highly effective in females
- No studies in males
- Novel production: baculovirus vector, insect
- Novel adjuvant: ASO4 adsorbed onto Al(OH)<sub>3</sub>
- As of October 2016, no longer marketed in US

# Recommendations

- Universal for girls and boys
- Gardasil: girls and boys starting age 11-12
- Catch up recommended through age 26 y for females, 21 for males\*
- Cervarix: licensed only for girls, same ages, no longer available in US

**ACIP**

# Adolescent Challenges

- Lack of routine visits
- No insurance or underinsured
- Lack of awareness of teens and parents
- Safety concerns: “too new”
- Consent when parent is not present

# Challenges with HPV Vaccine

- Physician recommendation not always strong
- Politicians and the media
- It's all about sex
- Pediatricians' attitudes
- It will make my child have sex

# Top 5 Reasons For No HPV

- Not needed/necessary
- Not recommended by provider
- Safety/side effects
- Lack of knowledge
- Not sexually active

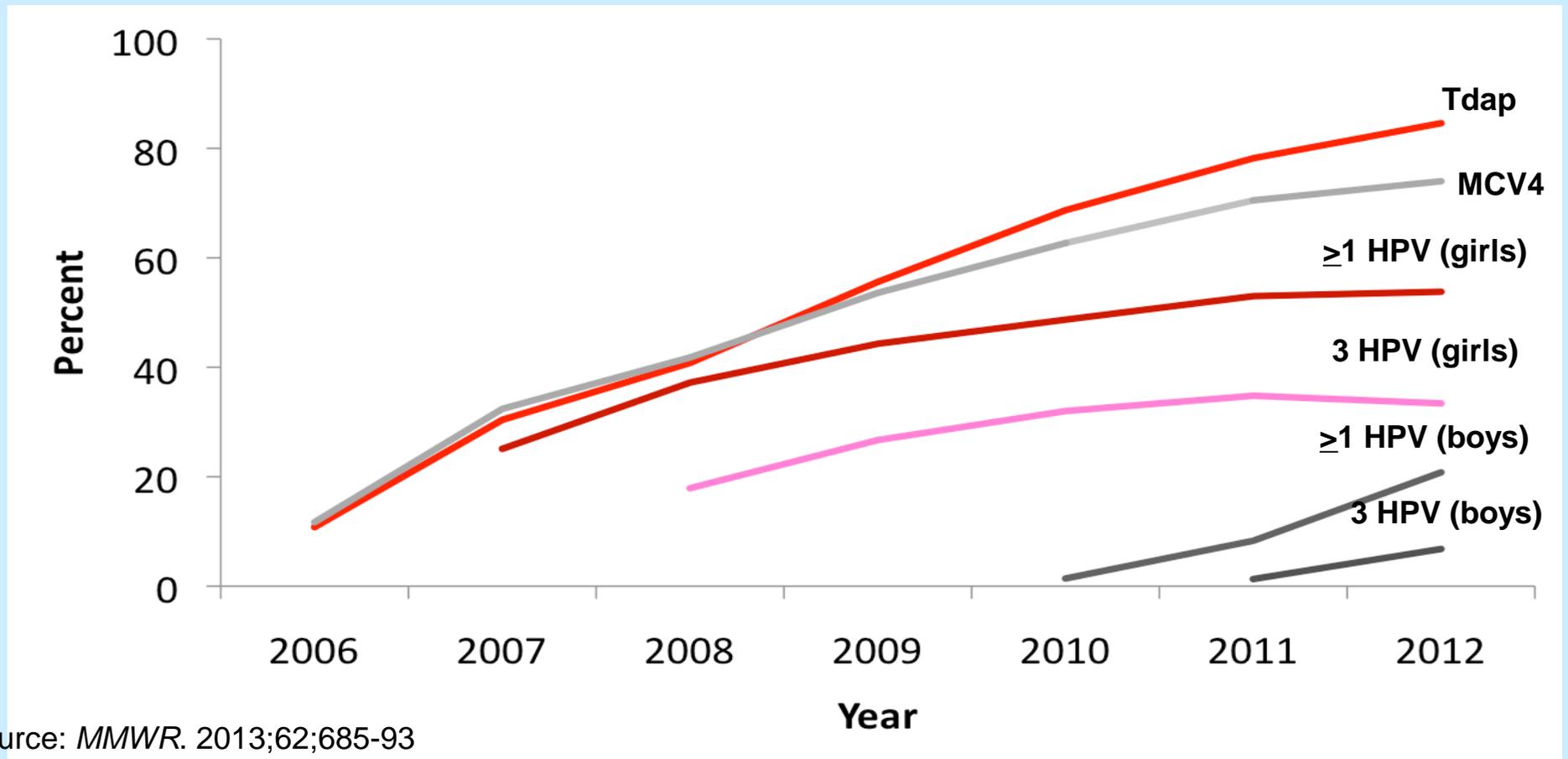
# Society for Adolescent Health and Medicine

Vaccinate adolescents at every opportunity;  
Make vaccinations a priority for health visits;  
Utilize standing orders; Use reminders/recall;  
Lobby for vaccine registries; Support alternate  
site programs (school, etc); Educate patients  
about benefits of vaccines

[www.adolescenthealth.org](http://www.adolescenthealth.org)



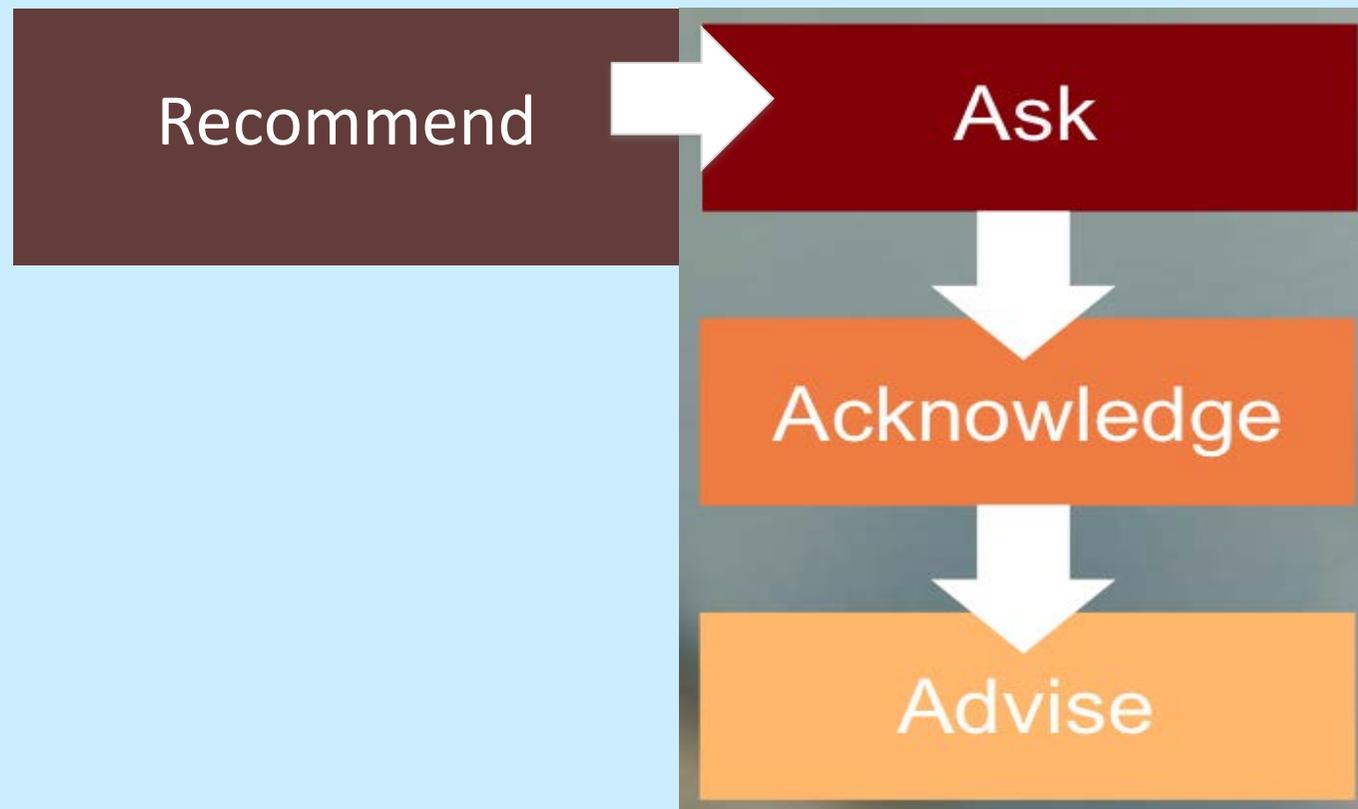
# Vaccination Coverage Levels Ages 13-17 NIS-Teen, 2006-2012



Source: *MMWR*. 2013;62;685-93

**“But adolescents just don’t make office visits!”**

# A PRACTICAL IMMUNIZATION COMMUNICATION STRATEGY



Developed by Vax Northwest – a Seattle-based collaborative



# Recommend

Clearly state your recommendations for immunizations that are due today.

Treat HPV just like the other routinely recommended adolescent immunizations.

*Sam is due for 3 shots today:  
HPV vaccine, meningococcal vaccine and Tdap vaccine.*

*Michelle should have 3 shots today to protect her from the cancers caused by HPV, and infections causing meningitis, whooping cough, tetanus, & diphtheria.*



# Ask (Use open-ended questions)

Ask what questions they have about the vaccines or the schedule.

*What questions do you have for me about these vaccines?*

Clarify and re-state their concerns to make sure you understand.

*It sounds like you're concerned that the HPV vaccine isn't necessary because Emily is a virgin.*

*Am I understanding this?*



## Acknowledge – Strategy for “Accepting Parent”

Support the parent’s decisions to follow the recommended schedule.

*Giving the adolescent vaccines is a great step to take.*

*Giving Sophie these vaccines is the single most important way our office can work with your family to keep her protected from serious diseases.*



# Acknowledge – Strategy for “Hesitant Parent”

**Acknowledge the parent's concerns**

*There are a lot of different opinion about vaccines and a lot of conflicting information...*

**Make clear your goal is the same as the parents**

*I know you want to do everything you can to keep Sophie safe, and so do I*

**Name the emotions you observe**

**Be clear that you are concerned for the health of the adolescent, not just public health safety**



# Advise

- Address the parent's specific concerns
- Offer to assist them to get information
- Allow them time to reflect and consult
- Provide them with an opportunity to revisit concerns
- Develop a plan that is acceptable to the parent, noting you understand that the decision and burden of responsibility is theirs
- Schedule a follow-up appointment



# **ACCURATE AND SUCCINCT ANSWERS TO FREQUENTLY ASKED QUESTIONS ABOUT HPV VACCINATION**



## **FAQ 1: (Didn't know much about HPV)**

***Why is this vaccine needed?***

***--What is HPV?***

***--Is HPV common?***

***--How is HPV spread?***



# U.S. HPV Prevalence & Incidence Versus Recognition

## ➔ US statistics

➔ Currently infected ~79 million

➔ New infections/year ~14 million

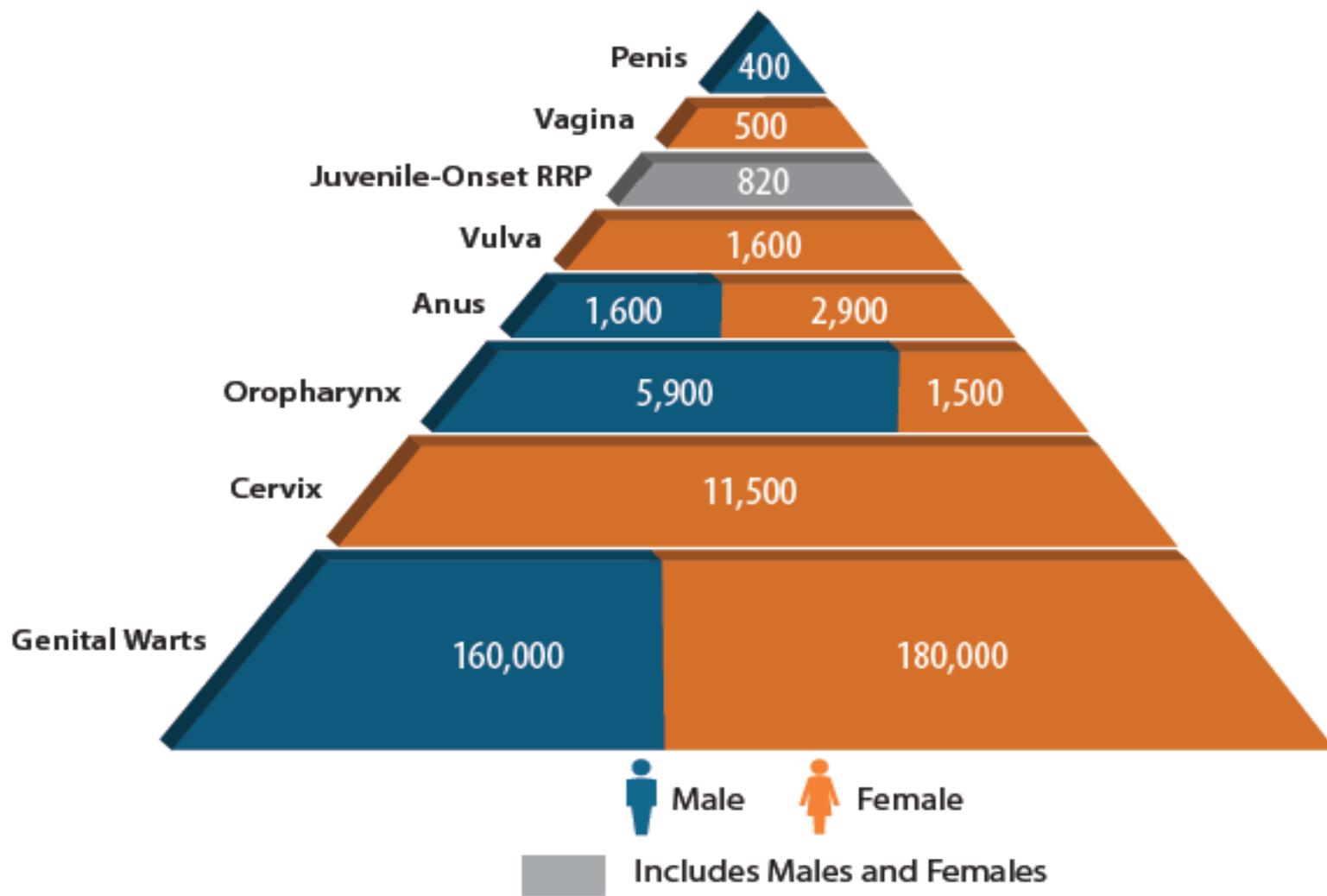
➔ HPV infection is most common in people in their teens and early 20s

➔ **HPV is the most common STI, but most people never know that they have been infected –**

**-Female-abnormal pap test w/ positive HPV test**

**-Male – no commercially available test**

## Numbers of U.S. Cancers and Genital Warts Attributed to HPV Infections





# How is HPV spread?

- ➔ HPV exposure can occur with any type of intimate sexual contact, not just intercourse
- ➔ Among a cohort of adolescent women without prior vaginal intercourse (followed longitudinally):
  - ➔ HPV was detected in 46% of females *prior* to 1st vaginal sex
  - ➔ 70% of these women reported non-coital behaviors that may in part explain genital transmission
- ➔ Condoms do not completely stop HPV transmission



# Transmission During Intercourse

- ➡ **Nearly 50% of high school students have already engaged in sexual (vaginal-penile) intercourse**
  - ➡ 1/3 of 9th graders and 2/3 of 12th graders have engaged in sexual intercourse
  - ➡ 24% of high school seniors have had sexual intercourse with 4 or more partners
- ➡ **About 50% of people are infected with HPV within 12 months of sexual debut**

Jemal A et al. *J Natl Cancer Inst* 2013;105:175-201

Winer RL, Lee SK, Hugh JP, et al. *Am J Epidemiology* 2003. 157:218-226.



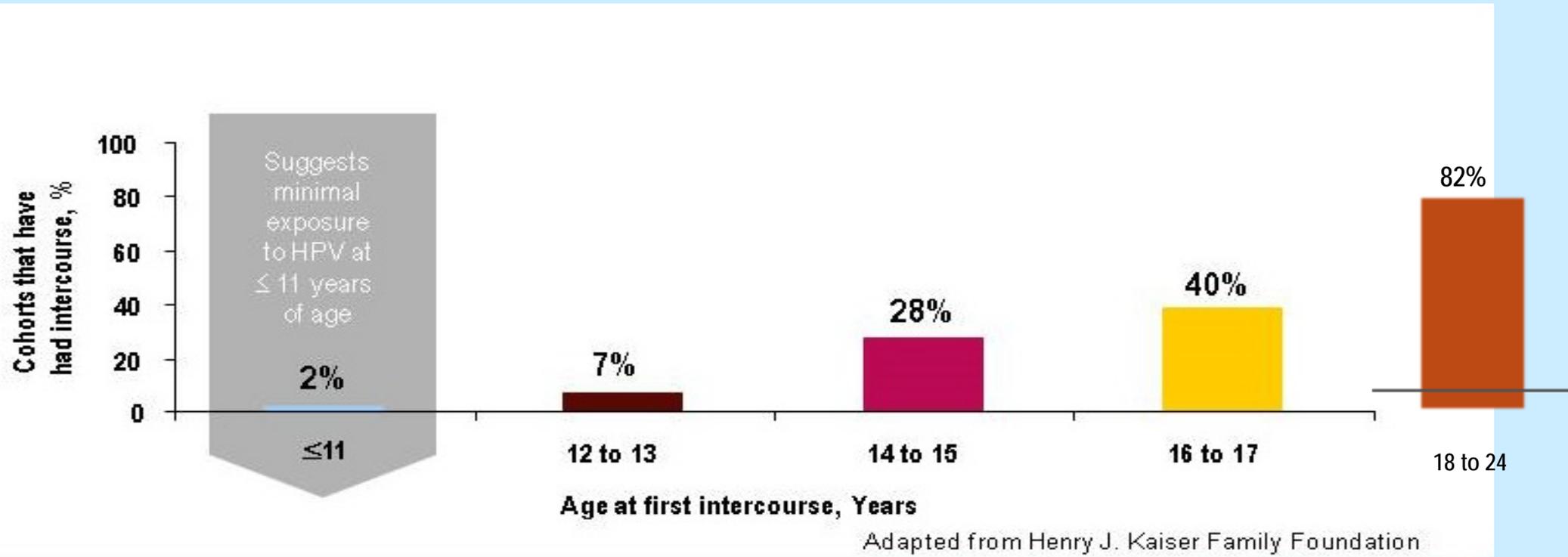
**FAQ 2: *Why give this at 11 or 12 years of age?***



# Rationale for HPV vaccination at 11-12 years of age

- ➔ **Optimal vaccine efficacy is derived if the vaccine series is received before onset of sexual activity.**  
(The vaccine is inactive against previously acquired HPV types.)
- ➔ **Antibody responses are highest at ages 9 through 15 years.**

# Rationale for vaccinating early: Protection prior to exposure to HPV



Markowitz *MMWR* 2007;  
Holl Henry J Kaiser Found 2003;  
Mosher *Adv Data* 2006



# Will protection last?

- ▶ Efficacy against infection and cervical lesions from HPV strains 16 & 18 -- shown up to
  - ▶ 8.4 years with the bivalent vaccine
  - ▶ 5 years with the quadrivalent vaccine
- ▶ Ongoing monitoring is essential so we will know if a booster is needed

Romanowski B. Hum Vaccin. 2011 Feb;7(2):161-9. Epub 2011 Feb 1.

Long term protection against cervical infection with the human papillomavirus: review of currently available vaccines.



**FAQ 3 (female): *Is HPV important?  
If a woman gets regular PAP smears she  
won't get cervical cancer.***

**Cervical cancer causes 4,000 deaths/ year  
in the U.S. with our current system of preventive  
screening**

**Among women with cervical cancer,  
28% had normal PAP w/in 3 years of dxn**

# Preventing Cervical Cancer with Pap Smears Has Risks

➔ 330,000 women undergo cone/LEEP procedures every year

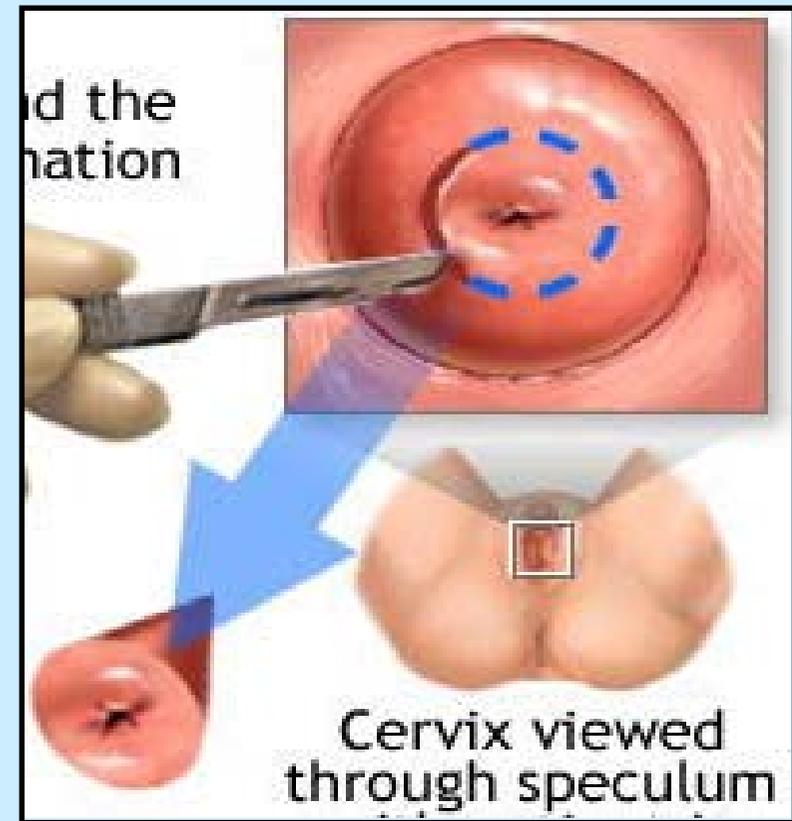
➔ LEEP/conization associated with obstetric morbidity

➔ Preterm delivery

➔ Preterm rupture of membranes

➔ Low birth weight

➔ *Long term developmental outcomes, neonatal intensive care costs*



***WHY REMOVE HALF THE CERVIX WHEN YOU COULD GET A SHOT IN THE ARM INSTEAD?***

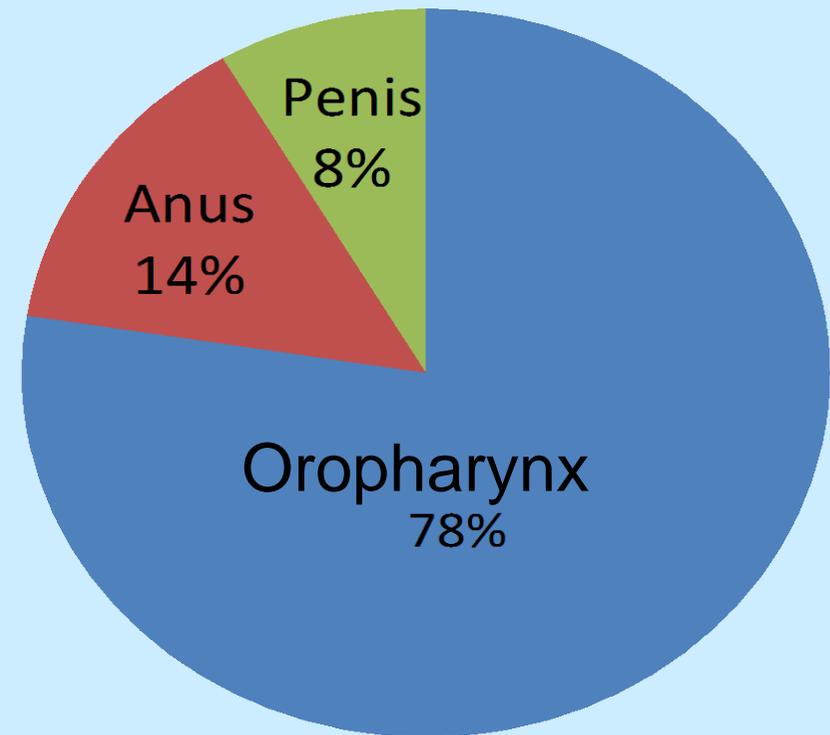
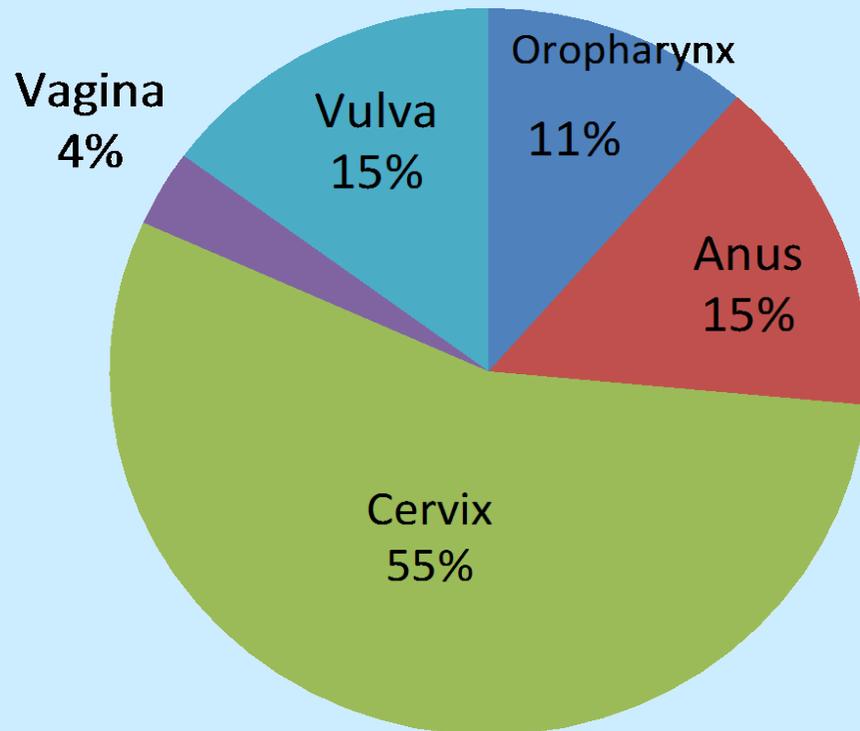


**FAQ 3 (male): *Is HPV important?***  
***My son won't get cervical cancer so***  
***why bother with this?***

# Average Number of New HPV-Associated Cancers by Sex, in the United States, 2005-2009

**Women (N=20,413)**

**Men (N=12,002)**





**FAQ 4: *Isn't the HPV vaccine too new to know if it works?***

# Summary of Efficacy to Date

- Vaccine is very effective at preventing infection with relevant types
  - Vaccinated people
  - “Herd” immunity
- Decreases in genital warts
- Decrease in prevalence of human papillomavirus in cervicovaginal specimens in girls age 14-19

Markowitz et al. Reduction in HPV prevalence; *J Infect Dis* 2013;208:385-93

Markowitz et al. Prevalence of HPV after introduction of the vaccination program in the United States; *Pediatrics* 2016;137(2):e20151968



## FAQ 5: *Is HPV vaccine safe?*

Moms in focus groups

- ➡ Stated concerns about both short- and long-term vaccine safety
- ➡ Not aware that HPV vaccine was tested
- ➡ Concerned that their child's fertility could be affected by the vaccine



# HPV Vaccine Safety

- 57 million doses of HPV vaccine distributed in US from 2006 – 2013 (many more abroad)
- The most common adverse events reported were considered mild (e.g., sore arm)
- For serious adverse events reported, no unusual pattern or clustering that would suggest that the events were caused by the HPV vaccine
- These findings are similar to the safety reviews of MCV4 and Tdap vaccines



# Post-Vaccination Syncope

- Serious injuries have occurred following syncope
- ACIP recommends that “vaccine providers should strongly consider observing patients for 15 minutes after they are vaccinated. If syncope develops, patients should be observed until the symptoms resolve.”
- Among the 41 reports with secondary injuries and information about the timing of syncope:
  - 76% occurred in adolescents aged 11 to 18 years
  - Time from vaccination to syncope onset was <5 minutes in 49%, <15 minutes in 80% of the reports
  - 10 of the 41 (24%) sustained injuries that were serious



**FAQ 6: *Will my child see this as  
“permission” to have sex?***



# Receipt of HPV vaccine does not increase sexual activity or decrease age of sexual debut

- Kaiser Permanente Center for Health Research
- 1,398 girls who were 11 or 12 in 2006, 30% of whom were vaccinated, followed through 2010
- No difference in markers of sexual activity, including
  - Pregnancies
  - Counseling on contraceptives
  - Testing for, or diagnoses of, sexually transmitted infections



## **FAQ 7: *Would you give HPV vaccine to your child?***

- Emphasizing your personal belief in the importance of HPV vaccine helps parents feel secure in their decision
- Some respondents in focus groups stated that they would feel more comfortable knowing that the doctor had vaccinated their own child or was planning to (if the child was <11)
- Respondents in an online survey stated that knowing that oncologists supported the recommendation made them more likely to get their child vaccinated



**TIPS ON HAVING YOUR WHOLE OFFICE TEAM  
FEEL COMFORTABLE COMMUNICATING  
ABOUT HPV VACCINE**



# 5 Communication Tips

- 1.** Be sure that everyone who has patient contact gets educated on HPV vaccination.
- 2.** Be sure that each office staff group knows their role in immunization communication.
- 3.** Encourage questions; interpret them as natural caution, not refusal.
- 4.** Remember to arrange for the next dose.
- 5.** Remember to give the VIS with each dose.

# Tips and Time-savers for Talking with Parents about HPV Vaccine

Recommend the HPV vaccine series the same way you recommend the other adolescent vaccines. For example, you can say “Your child needs these shots today,” and name all of the vaccines recommended for the child’s age.

Parents may be interested in vaccinating, yet still have questions. Taking the time to listen to parents’ questions helps you save time and give an effective response. CDC research shows these straightforward messages work with parents when discussing HPV vaccine—and are easy for you or your staff to deliver.



- CDC RESEARCH SHOWS:** The “HPV vaccine is cancer prevention” message resonates strongly with parents. In addition, studies show that a strong recommendation from you is the single best predictor of vaccination.
- TRY SAYING:** HPV vaccine is very important because it prevents cancer. I want your child to be protected from cancer. That’s why I’m recommending that your daughter/son receive the first dose of HPV vaccine today.
- CDC RESEARCH SHOWS:** Disease prevalence is not understood, and parents are unclear about what the vaccine actually protects against.
- TRY SAYING:** HPV can cause cancers of the cervix, vagina, and vulva in women, cancer of the penis in men, and cancers of the anus and the mouth or throat in both women and men. There are about 26,000 of these cancers each year—and most could be prevented with HPV vaccine. There are also many more precancerous conditions requiring treatment that can have lasting effects.
- CDC RESEARCH SHOWS:** Parents want a concrete reason to understand the recommendation that 11–12 year olds receive HPV vaccine.
- TRY SAYING:** We’re vaccinating today so your child will have the best protection possible long before the start of any kind of sexual activity. We vaccinate people well before they are exposed to an infection, as is the case with measles and the other recommended childhood vaccines. Similarly, we want to vaccinate children well before they get exposed to HPV.
- CDC RESEARCH SHOWS:** Parents may be concerned that vaccinating may be perceived by the child as permission to have sex.
- TRY SAYING:** Research has shown that getting the HPV vaccine does not make kids more likely to be sexually active or start having sex at a younger age.
- CDC RESEARCH SHOWS:** Parents might believe their child won’t be exposed to HPV because they aren’t sexually active or may not be for a long time.



**For more information visit:**

- **CDC**
- **AAP**
- **Immunization Action Coalition**
- **CHOP Vaccine Education Center**

**Email questions or comments to  
CDC Vaccines for Preteens and Teens:  
[PreteenVaccines@cdc.gov](mailto:PreteenVaccines@cdc.gov)**

**Smiling is a contagious condition!**